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CASES AND TREATMENT

OF

MASTOID DISEASE.

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presented by the author

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Cases and Treatment of Mastoid Disease.

By Lewis H. Taylor, M. D., Wilkes-Barre, Pa.

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Mr. President and members of the Luzerne County Medical Society:

Instead of attempting to prepare an elaborate paper on the subject of "Mastoid Disease," as assigned me, it has seemed to me preferable and more suited to our purpose, if I should deal briefly with some of the practical points of the disease only, and rehearse a few cases from my own observation, hoping thereby to elicit from members present a full and free discussion on this painful and oftentimes dangerous disease. I have taken the liberty therefore of changing the title of the paper, and shall pass over entirely any description of the anatomy of the parts affected, merely recalling to your minds the close association of the mastoid cells with the middle ear; the passage from one to the other, as you well remember, is frequently almost uninterrupted. This anatomical relation accounts for the readiness with which the inflammation of a chronic or even an acute otorrhœa passes over to the mastoid in some people.

Primary mastoiditis is an exceedingly rare disease; in an experience of several hundred cases of ear disease I have never yet seen a case of it. Dr. Cornelius Williams, of St. Paul, reports in Archives of Otology, vol. xiii, a case which was cured by applications of ice. There had, however, been a history of recurring earache for many years, and it seems to me that this may have been a case secondary to old trouble previously existing in the ear.

Dr. David Webster, in vol. xiii, Archives of Otology, reports three cases of inflammation of the mastoid cells without any appreciable inflammation of the middle ear. He says: "Although

in the majority of cases there is no doubt that the inflammation extends from the posterior nares along the eustachian tube, through the middle ear into the mastoid cells, yet there is no good reason for believing that the inflammation cannot in the nature of things originate in the mastoid cells themselves and travel perhaps in the opposite direction.

Dr. Swan Burnett, Dr. F. Tilden Brown, Dr. Roosa and others have reported cases, but all consider such exceedingly rare.

There are, roughly speaking, three grades of mastoid disease: periostitis, abscess, and caries.

The first named probably constitutes the largest portion of the cases, and many others which are allowed to develop serious and sometimes fatal complications, if properly treated, would be cut short at this stage. The dangers which result from neglected cases are of so grave a nature, that every practitioner should be on his guard to prevent the development of such dangers.

While such usually fall to the lot of the specialist in our large cities, the disease is nevertheless one which the general practitioner is quite apt to meet and one which he must often master without any assistance or advice from others, and it has seemed to me, therefore, a proper subject for discussion by this society. I am firmly convinced that a proper treatment of the acute affection preceding the mastoid disease and a prompt resort to Wilde's incision in doubtful cases, would relieve the majority of them and prevent the disastrous consequences that too often follow when the "let alone" treatment is pursued.

The disease, as we meet it in practice, is almost always associated with and the direct result of suppurative otitis, either acute or chronic, and since this is true it behooves us to treat intelligently and promptly every such case that comes to our notice, and not, as is too often done in the case of children, say to the parents: "Oh, just syringe it a little with warm soap suds and he will probably outgrow it." The evils that have resulted from the "outgrowing" process in ear diseases are incalculable.

For an elaborate paper I should properly discuss the causes and symptoms of otitis media, but the limits of our time forbid, and as we wish to deal mainly with the practical aspect of the subject I will pass over this portion entirely, as I well know it is only too familiar to every practitioner of medicine.

What shall we do then to prevent mastoid disease? When called to a case of acute suppurative otitis we should treat it partly as we would treat threatened suppuration elsewhere, remembering only the necessity for greater vigilance and more energetic measures, owing to the anatomical relations of the parts involved. Leeches should be applied in front of the ear, and if there be any pain over the mastoid, two or more leeches should be applied here also. Hot fomentations should be used and warm water gently instilled in the ear; but above all, as soon as we are convinced that pus has formed in the tympanum, which can generally be determined by inspecting the bulging membrane, we should resort to paracentesis, and not wait for the membrane to rupture spontaneously. Then by inflation through the eustachian tube expel so much of the contained pus as possible and continue the application of heat and moisture, with opiates to relieve pain as necessary. I have found the instillation of a half dozen drops of a four per cent. solution of cocaine in Magendies' liquor morphiæ every two hours to be of value, though I have not found the solution of cocaine alone, as recommended in earache, of much service. Any drops put in the ear should always be previously warmed.

Of course in recommending this treatment I am considering the cases as they are usually presented to us; that is, from twenty-four hours to several days from the time of their inception. Seen at the start, many cases of incipient otitis could without doubt be successfully treated by applications of ice.

Very often a threatened case of mastoid disease may be aborted by a timely puncture of the drum membrane and thorough inflation of the eustachian tube and tympanum.

I was called some years ago, through the courtesy of the President of this Society, to see a patient, which well illustrates the above statement. The patient was a robust, vigorous man, who had been suffering for some days with severe inflammation of the middle ear, with great tenderness and swelling over the mastoid, high fever, intense pain, almost delirious and apparently threatened with an acute attack of meningitis. All appropriate remedies had been used, and it was now deemed advisable, as the membrane was still intact, to puncture it, and if the symptoms did not soon abate, then to perform Wilde's incision, and later, if

necessary, trephine the mastoid. Examination revealed a bulging membrane almost ready to burst, evidently confining pus within the tympanum. A paracentesis was quickly performed, followed by an outpouring of pus. The ear was syringed with warm water, eustachian tube inflated and the same repeated as needed. The symptoms of meningitis and of mastoid disease quickly subsided and the patient made an excellent recovery.

A very similar case, in a young man of twenty-three, was promptly relieved by the same procedure. I have had occasion to perform this operation on several occasions and always with beneficial results and never with any ill effects.

Very frequently, however, we do not see such patients until there has been suppuration with perforation of the membrane, and foul discharge existing for many days and often for weeks and months. Sudden exposure to severe cold or other cause, lights up the sluggish inflammation and patients come to us with all the symptoms of mastoid disease and threatening abscess of the deeper tissues. Even then, the resort to leeches, poultices, hot douches, etc., will sometimes relieve the patient without operation, as the following case illustrates:

Mrs. M., of Miner's Mills, came to me May 30, 1887, with hearing for the watch right ear normal and left ear not even in contact. The left ear was discharging offensive pus. She was suffering great pain, had some swelling and tenderness over the mastoid, and gave a history of suppuration lasting two weeks. I thoroughly cleansed the ear with warm water, used Politzer inflation, applied boracic acid freely and recommended similar treatment to be repeated daily. On June 1 the discharge continued with mastoid symptoms aggravated. I now recommended leeches; these gave relief, but it was only temporary. After continuing treatment about a week, I advised an operation, intending to perform Wilde's incision. She objected to this and wished to try the leeches again. I consented. After a few more trials without permanent relief, she agreed to an operation and I was to go to her house the next day and perform it. She sent me word on the morning set for the operation that she was somewhat better, would like to delay and continue leeches. This she did off and on through June and early July, using in all twenty-one leeches. She improved and relapsed several times, but finally recovered without the operation. By July 25 the swelling and tenderness of the mastoid had entirely subsided and suppuration from the ear had ceased. Hearing distance in the affected ear was two inches, and as the other was normal she regarded herself as entirely well. I have no doubt she has further improved, but I have not seen her since.

I have had several other cases in which the use of leeches and poultices rendered an operation unnecessary, though I believe in

the one above recorded as well as in some others, a free incision over the mastoid would have saved many days and nights of suffering.

The incision proposed by the celebrated Dublin surgeon and bearing his name, is one that can be safely employed in such cases, and which should, in my judgment, if cases come under our care early enough, always precede the operation of trephining or chiseling the bone.

Wilde's incision should be made about a half inch back of the attachment of the auricle and parallel to it and should extend fully an inch and a half in length from the tip of the mastoid process upward. It is usually recommended that the cut should be made from below upward so as to avoid slipping the knife into the tissues of the neck. I have performed the operation several times, and always from above downward, never having any difficulty in stopping at the desired point. It is also recommended to carefully select the distance from the auricle so as to avoid wounding the posterior auricular artery, but this is a matter of small account, for if wounded the hemorrhage is of advantage in relieving the congested tissues and it can be readily controlled by pressure when desired. Especial care must be taken to divide all of the tissues down to the bone, as the pus is often found directly under the periosteum, and it is surprising to what depth the knife must sometimes be entered through the swollen tissues before the bone is reached. In the following cases, which I will briefly relate, the result of the operation was all that could be desired, and while, as I stated above, I believe that the majority of such cases could be relieved by Wilde's incision, I do not mean to convey the impression that the more difficult and dangerous operation of opening the mastoid can be always avoided.

Case I.—Mrs. A., suffering with chronic otorrhœa, which had within a few weeks past become complicated with mastoid disease. She had been treated for some time without improvement and the ear was discharging pus at the time of her visit. As the secretion was already rather free I began the usual treatment of hot applications, leeches, etc., but these were of but little avail, and as her suffering was increasing with all symptoms aggravated I proposed, in a few days, an operation. A free incision an inch and a half long was made under ether, but brought nothing but blood. Hot poultices were applied and the next day pus appeared in the incision. These continued, with cleansing and drainage of the wound, relieved all symptoms and she speedily recovered.

Case II.—A young man of twenty-five, a strong, hearty miner, from exposure to cold had contracted an acute otitis media for which he was properly treated by his family physician a week or more. When I was called to see him, symptoms of mastoid disease were so prominent that I at once advised operation. His suffering was intense and not relieved by opiates. Assisted by Dr. Miner, who gave an anaesthetic, I cut down through the tissues more than an inch in depth, cutting at the same time the artery which spurted freely. The hemorrhage was readily controlled by pressure. In this case also, although the tissues were freely divided, there was no pus. Poultices were applied and the next day I found him much easier. Upon entering a blunt probe to the bone and simply breaking up the adhesions of the cut, the pus welled out abundantly. The symptoms rapidly subsided and he had an uninterrupted recovery.

Case III.—Was a man aged about fifty, whom I saw in consultation and then took charge of at the request of his attending physician. He had had earache for some weeks with discharge of pus which had now stopped. At the time of my first visit he had much swelling and tenderness over the mastoid, with deep seated pain extending to the whole side of his head. He was first treated with poultices, but these had been discontinued and ice applied. There was evidently pus already formed under the periosteum, and I advised immediate operation, but this was delayed a day or two at the request of his physician to try the effect of poultices again. At the end of two days I performed Wilde's incision, without assistance and, as he was a plucky man, without anaesthetic. This pus at once discharged freely and, as the artery was cut, the blood also, but this was readily controlled by pressure. He stated that the pain of my finger pressing the artery was worse than that caused by the cut. He had been suffering for many days and nights, unable to sleep and was on the border of delirium, but from the time of the operation on the symptoms rapidly subsided and he quickly recovered with a fair amount of hearing.

Case IV.—I will relate a little more in detail as it illustrates the tendency of the disease in some persons, to subside and then from slight causes to be relighted. Miss W., age 23, was seen at her home Dec. 20, 1889. She was suffering intense pain in the left side of head, referred especially to the left ear. Watch could not be heard even in contact on the affected side. She stated that she was first troubled with earache early in November and was obliged to discontinue her occupation of teaching for four days. Her physician gave her drops for her ear, she got better and resumed her duties, but could not hear.

There was also a swelling back of the ear at the time, to which she applied a paint under the doctor's direction. She had another attack of pain right after Thanksgiving and got better. Then again on Dec. 18. She went to Music Hall in the evening of Dec. 19, and returned home with the earache, and now, Dec. 20, has severe pain over the left side of her head, in left ear, and particularly over the mastoid. She had been taking morphine pills but they did not relieve her. Mastoid region is swollen and somewhat œdematous. Pulse 100, temperature 102. I used syringe and Politzer's inflation, making hearing two inches, and ordered two leeches to the mastoid, to be followed by poultices.

Dec. 21, considerable pain through the night but not much better. Ordered Sulphide of Calcium gr. 1-10 every two hours.

Dec. 22, patient sent word in the evening that she was suffering intensely and I gave Chloranodyne, thirty drops, to be repeated as necessary.

Dec. 26, I gave Quinine, as she seemed to be worse on alternate days, and also biniodide of mercury gr. 1-16 three times a day.

Dec. 29, she was somewhat easier, but still in bed, the swelling somewhat less. I had used syringe and Politzer daily and there was but little discharge from the ear. I had told her an operation would probably be necessary.

By Dec. 30, I was sure there was pus under the periosteum and urged an operation, but her friends wished to avoid it if possible. On Jan. 2, as she was still unwilling for an operation, though suffering greatly, I left, telling her to send for me when ready to be operated on, as I would not return otherwise.

She notified me Jan. 4, of her willingness, but I could not operate until the next day, when, assisted by Dr. Barney, who gave the ether, I made a free incision a half inch back of the ear and down to the bone. Pus ran out in large quantities. The wound was syringed with an antiseptic solution, a tent inserted, and poultices continued. The next day she was free from pain and continued to improve steadily. By Jan. 10 the hearing distance was four inches and she was able to get up By the 17th she was able to come to my office, hearing 12 inches, swelling and soreness all gone. By Feb. 1 she was entirely well and hearing in right ear normal, left ear eighteen inches. This patient came to me again more than a year later with similar trouble developing in the right ear. The hearing distance for watch only in contact; pain intense. By using leeches, inflation of tympanum, &c., she recovered entirely without operation. The left ear continued normal.

In this case the tissues of the neck were much swollen before the operation and I greatly feared that pus would burrow from the mastoid, setting up a condition that would require months for its recovery.

The question may naturally be asked, why will so simple a procedure relieve so serious a disease? It seems to me that in all of those cases in which there is great swelling and tenderness over the mastoid, there is a tendency of the inflammation towards the surface, and perhaps in such cases the mastoid is more porous than in others. A free incision, by depletion of the vessels alone, greatly relieves the acute symptoms, and by relieving pressure encourages the pus to break through the outer shell of bone, which in many cases has already become abnormally thinned by the inflammatory process. In others the pus has already accumulated beneath the periosteum and only needs the incision to free it and prevent its burrowing into the tissues of the neck.

There are, however, many cases of a severer grade of the disease which the incision of Wilde will not relieve, and we must

then resort to the more serious operation of opening the mastoid. Politzer says: "If we find the periosteum and cortex unchanged after Wilde's incision, and there is no abatement of pain experienced after one or two days, then it is almost certain that an abscess is situated in the interior of the mastoid process, and a surgical operation becomes necessary."

Dr. F. C. Hotz, of Chicago, in a very interesting article in volume ix of Archives of Otology, strongly recommends an early operation for opening the bone in mastoid disease, and objects decidedly to the delay suggested above.

If, upon making a Wilde's incision the periosteum and bone beneath are found but little changed and pus is not at once reached, he proceeds immediately to open the mastoid. He favors this plan for the following reasons:

1. It abridges the suffering of the patient.

2. It saves the disappointment of an unsuccessful operation and subsequent resort to a second.

3. It shortens the course of suppurative inflammation.

4. It arrests the disease before it becomes dangerous to life.

5. It enhances the possibility of restoring a useful amount of hearing.

The operation has not in past years been a popular one, and has been usually undertaken as a last resort. No doubt if it were performed earlier the percentage of favorable results would be higher, and partly perhaps because many cases would undergo operation that would have recovered without it. In 1873, Dr. A. H. Buck could record but thirty-one operations, with twenty-three good results and in the remaining eight fatal cases death could be attributed directly to the operation in only one. It has grown in favor since then, and with the advent of antiseptic surgery the results are regarded as much better.

Dr. Chas. Knapp, of this society, reported a case in *Philadelphia Medical Times*, February, 1879, in which the patient had had earache since September, 1877. In June, 1878, there was perforation of drum head; blister over the mastoid was ordered. On July 4 there was purulent discharge from the ear, with great pain and swelling over the mastoid. Perforation of the cells was now resorted to and two drams of pus evacuated. Bone was denuded of periosteum and soft. The wound closed and had to be

re-opened, but a successful result was finally obtained, with hearing distance for watch at eight inches.

The operation is by no means devoid of danger, and while many lives have without doubt been saved by it, on the other hand many deaths have been reported following the operation, and in some cases as the direct result of it. The dangers most dreaded are wounding the lateral sinus, and breaking entirely through the diseased bone into the brain itself.

Having decided in any case that the mastoid must be opened, how shall we proceed to accomplish it? It is entirely unnecessary for me, in this presence, to enter into all of the details of the operation, the antiseptic precautions to be taken, etc.; suffice it to say, the general principles which we now all employ in any surgical case should not be here neglected. As to the instruments to be used, there are few; as to the instruments suggested, there are many. The late Dr. Strawbridge, of Danville, a few years ago reported cases in which he had opened the mastoid with an ordinary gimlet, purchased, in the absence of a better instrument, at a neighboring store.

The trephine, formerly in vogue, was practically superseded a few years ago by ordinary drills, and these in late years by the hammer and chisel, which are now regarded by most operators as the safer instruments to be employed.

Elaborate directions are given in some treaties as to the proper location of trephining or chiseling point. It may be said in general that it is about on a level with the superior wall of the external meatus and one inch behind it. Mitzkuner, in the *Wiener Klinische Wochenschrift*, suggests that the point at which trephining or chiseling the mastoid process should be commenced may be safely determined thus: "By drawing the ear forward a fold is formed immediately behind the auricle. Beneath this fold there is a flat bony prominence. A depression will be found between this prominence and the base of the mastoid process. This area should be chosen for the operation, because a chisel can here descend safely from ¼ to ⅓ inch, and the transverse sinus, which varies its course in different individuals, never touches at this point."

The only objection to the selection of this area is the possibility of puncturing the external auditory canal—a danger which

is nothing in comparison to that of injuring the transverse sinus.

In cases which progress favorably the time of healing varies greatly from one week to several months, while in some a permanent fistula of the mastoid results.

The third grade of the disease, caries of the mastoid, ought to be rare, and yet we sometimes see it.

I have at present under treatment a little patient eight years of age, who has gone through all of the grades of ear and mastoid disease, and who has by no means recovered, although under observation for several months. She was taken ill nearly a year ago and had scarlet fever and diphtheria, followed by ear and mastoid disease. She was in a neighboring state at the time of her illness and unable to return for several weeks. When she came under my care in October, 1890, both ears were discharging greenish pus; the left mastoid had opened spontaneously and was discharging in three places. The left ear was partly filled with polypi. She was very anaemic and her condition generally was bad. After treatment for some time I advised administering an anaesthetic for the purpose of removing the polypi and of enlarging the openings over the mastoid. I removed the growths from the ear and made a free incision over the mastoid an inch and a half long. The knife entered readily into a cavity of carious bone. This I scraped freely with a curette and dressed antiseptically. She since improved greatly, but is not well. In syringing the left ear the liquid flows out freely through the mastoid openings as if the latter were thoroughly riddled. Her general condition under the use of tonics is fairly good and I trust she will eventually recover, though the prospect for hearing is not bright.

Another case of caries of the mastoid, which I saw after it had existed some months, died in the city hospital of meningitis about a week after operation.

Dr. Thomas Pooley in vol. ix, Archives of Otology, reports a case of chronic caries of the mastoid, operated upon and followed by death. The operation should be performed by a curette or gouge, scraping away all of the diseased bone and afterward dressing with the usual antiseptic precautions. Such cases are usually found in strumous subjects, hence a liberal use of cod oil and other tonics is advisable. The condition is a serious one and the results of treatment not brilliant. The dangers attending an operation, however, should not deter us from its performance; but where opportunity of treating our patients in the inception of their trouble is given, we should endeavor to so manage the same as to render this serious complication a matter of very infrequent occurrence.

I feel that I ought to apologize to the Society for this hastily prepared and somewhat rambling presentation of a very impor-

tant subject. It does not pretend to be a thorough paper on mastoid disease, but I have desired rather to present what seemed to me the practical side of the subject and thereby elicit from others a free discussion of the same.

DISCUSSION.

Dr. Murphy—I am a believer in Wilde's operation; performed it frequently and always with happy results. I have found the peroxide of hydrogen the most useful local treatment in these cases.

Dr. Barton—I have opened the mastoid process with a gimlet in one case. Have several times practiced incision with good results.

Dr. Weaver thought the diagnosis was often obscure, pain often being present for quite a long time before other symptoms point to the presence of pus.

Dr. Murphy said, deafness, pain and swelling call for leeches and poultices, and if relief be not afforded the incision should then be made.

Dr. Kunkle—I have seen several cases of mastoid disease within the last few months. Have practiced incision successfully. I saw one case with the history of mastoid disease where the bulging extended down to the neck. Upon incision two ounces of pus was evacuated.

Dr. Faulds thought Wilde's operation and trephining were both quite common now. He had never used leeches in the treatment of this disease, but believed that he had aborted cases by the use of blisters.

Dr. Taylor, in closing discussion, gave a history of the operative procedures. He said so late ago as 1883 the propriety of trephining was questioned by a large number of otologists. At the present time free incision and trephining when necessary are in universal favor. The diagnosis he admitted was often obscure. Tenderness and pain extending over side and head, and long continued, were good indications for operation. He had used the peroxide of hydrogen in otitis media with satisfactory results. He thought the most important thing was to *prevent* mastoid disease by attention to cases of ear disease.